

AMENDMENT TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. The following listing provides the amended claims with the amendments marked with deleted material crossed out and new material underlined to show the changes made.

Claims 1-26 (Canceled).

27. (Currently Amended) A method of routing a plurality of nets in a region of a design layout, each net having a set of pins in the region, the method comprising:

a) partitioning the region into several sub-regions, wherein a plurality of edges exist between said sub-regions,

b) for each combination of a particular edge and a particular net, identifying an edge-intersect cost based on the number of potential routes for the particular net that intersect the particular edge, wherein a potential route for a particular net traverses the set of sub-regions that contain the particular net's set of pins, wherein at least one particular net includes at least two potential routes; and

c) selecting routes for nets based on the computed edge-intersect costs.

28. (Previously Presented) The method of claim 27, wherein the cost for each combination of a particular edge and a particular net equals the number of potential routes that intersect the particular edge.

29. (Previously Presented) The method of claim 27, wherein identifying the cost for each combination of a particular edge and a particular net comprises:

identifying an edge-intersect probability that equals the number of potential routes of the particular net that intersect the particular edge divided by the number of potential routes of the particular net.

30. (Previously Presented) The method of claim 29, wherein the cost for each

combination of a particular edge and a particular net equals the edge-intersect probability for the combination.

31. (Previously Presented) The method of claim 29, wherein identifying the cost for each combination of a particular edge and a particular net further comprises:

deriving the cost for the combination from the edge-intersect probability for the combination.

32. (Currently Amended) The method of claim 27, wherein selecting ~~a route~~ routes for ~~each net~~ nets comprises:

- a) using the edge-intersect costs to predict congestion of the edges;
- b) based on the predicted congestion, selecting a route ~~routes~~ for each net ~~nets~~.

33. (Currently Amended) The method of claim 27, wherein selecting ~~a route~~ routes for ~~each net~~ nets comprises:

- a) using the potential routes and the edge-intersect costs to formulate a linear-programming ("LP") problem;
- b) solving the LP problem to identify one route for each net.

34. (Original) The method of claim 33, wherein the LP problem is an integer linear programming ("ILP") problem, and solving the ILP problem results in an ILP solution that specifies one route for each net.

35. (Currently Amended) The method of claim 33, wherein solving the LP problem results in a real-number solution for each net, wherein selecting ~~a route~~ routes for ~~each net~~ nets further comprises converting the real-numbered solutions to integer solutions that specify only one route for each net.

36. (Currently Amended) A method of routing a plurality of nets in a region of a

design layout, each net having a set of pins in the region, the method comprising:

a) partitioning the region into several sub-regions, wherein a plurality of paths exist between said sub-regions,

b) for each combination of a particular path and a particular net, identifying a path-use cost based on the number of potential routes of the particular net that use the particular path, wherein a potential route for a particular net traverses the set of sub-regions that contain the particular net's set of pins, wherein at least one particular net includes at least two potential routes; and

c) selecting routes for the nets based on the computed path-use costs.

37. (Previously Presented) The method of claim 36, wherein the cost for each combination of a particular path and a particular net equals the number of potential routes of the particular net that use the particular path.

38. (Previously Presented) The method of claim 36, wherein identifying the cost for each combination of a particular path and a particular net comprises:

identifying a path-use probability that equals the number of potential routes of the particular net that use the particular path divided by the number of potential routes of the particular net.

39. (Previously Presented) The method of claim 38, wherein the cost for each combination equals the path-use probability for the combination.

40. (Previously Presented) The method of claim 38, wherein identifying the cost for each combination of a particular path and a particular net further comprises:

deriving the cost for the particular path from the path-use probability for the particular path.

41. (Currently Amended) The method of claim 36, wherein selecting ~~a route~~ routes

for ~~each net~~ nets comprises:

- a) using the path-use costs to predict congestion of the paths;
- b) based on the predicted congestion, selecting a route ~~routes~~ for each net

nets.

42. (Currently Amended) The method of claim 36, wherein selecting ~~a route~~ routes for ~~each net~~ nets comprises:

- a) using the potential routes and the path-use costs to formulate a linear-programming ("LP") problem;
- b) solving the LP problem to identify one route for each net.

43. (Original) The method of claim 42, wherein the LP problem is an integer linear programming ("ILP") problem, and solving the ILP problem results in an ILP solution that specifies one route for each net.

44. (Currently Amended) The method of claim 42, wherein solving the LP problem results in a real-number solution for each net, wherein selecting ~~a route~~ routes for ~~each net~~ nets further comprises converting the real-numbered solutions to integer solutions that specify only one route for each net.